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Examiner Initials	Cite No.	U.S. Patent Document Number Kind Code <sup>a</sup> (If known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document <sup>b</sup> MM-DD-YYYY
BOS		6,377,438 B1	Deane et al.	06-23-2002
		6,374,008 B2	Solgaard et al.	04-16-2002
		6,360,036 B1	Couillard	03-19-2002
		6,329,738 B1	Hung et al.	12-11-2001
		6,307,663 B1	Kovars	10-23-2001
		6,289,145 B1	Solgaard et al.	09-11-2001
		6,275,325 B1	Sinclair	08-14-2001
		6,275,330 B1	Dhuler et al.	08-14-2001
		6,255,757 B1	Dhuler et al.	07-03-2001
		6,211,598 B1	Dhuler et al.	04-03-2001
		6,137,206 B1	Hill	10-24-2000
		6,067,797 B1	Silverbrook	05-30-2000
		5,905,571 B1	Butler et al.	05-18-1999
		5,561,558 B1	Shiono et al.	10-01-1996
		5,069,419 B1	Jerman	12-03-1991
		3,216,315 B1	Keller	11-09-1965
		3,045,532 B1	Staunton	07-24-1962
		5,757,536	Ricco et al	5/26/98
		6,428,173	Dhuler et al	8/6/02
	PKS		6,329,738	Hung et al

[illegible]

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Application Number		Herewith	
Filing Date			
First Named Inventor		Chan et al	
Group Art Unit			
Examiner Name			
Attorney Docket Number		100202586-5	
Sheet 3 of 6			

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS		
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
BUT		V. RAMACHANDRAN et al., An assessment of the blazed grating electro-optic deflector, J. Phys. D: Appl. Phys. Vol. 8, 1975 pp. 1921-1926
		K. B. PETERSEN, Micromechanical light modulator array fabricated on silicon, Appl. Phys. Letters, Vol. 31, No. 8, Oct. 15, 1977 pp. 521-523
		M. H. BRODSKY et al., Color Projection Deformographic Display using Silicon Micromechanics and Optical Diffraction, IBM Technical Disclosure Bulletin, June 1, 1980 pp. 394-395
		M. B. PENNEBAKER, Projection Display with Electrochemically Created Grating Structures, IBM Technical Disclosure Bulletin, June 1, 1980 pp. 397-400
		M. MAYSTRIS et al., Optimization of a wavelength demultiplexer in fiber optics using gold echelette gratings, Proc. SPIE - Application, Theory, and Fabrication of Periodic Structures
		R. B. BROOKS, Micromechanical light modulators on silicon, Optical Engineering, Vol. 24, No. 1, Jan./Feb. 1985, pp. 101-106
		J. A. STEIN et al., A Display Based on Switchable Zero Order Diffraction Grating Light Valves, Advances in Display Technology V SPIE Vol. 526 Jan 1985 pp. 105-112
		P. PHILIPPE et al., Wavelength demultiplexer: using echelette gratings on silicon substrate, Applied Optics, Vol. 24 No. 7, April 1, 1985 pp. 1006-1011
		S. R. MALLINSON et al., Miniature micromachined Fabry-Perot interferometers in silicon, Electronics Letters, Vol. 23 No. 20, Sept. 24, 1987, pp. 1041-1043
		J-P. LAUDE et al., Wavelength division multiplexing/demultiplexing (WDM) using diffraction gratings, Proc. SPIE - Application, Theory, and Fabrication of Periodic Structures SPIE Vol. 503 Aug. 21-23, 1984, pp. 22-28
BUT		P. HESKETH et al., Anomalous Emissivity from Periodic Micromachined Silicon Surfaces, Technical Digest IEEE Solid-State Sensors Workshop, June 1986 (reprinted in "Micromechanics and MEMS - Classic and Seminal Papers to 1990") June 1986

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# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet

4

of

6

## Complete If Known

Application Number	Herewith
Filing Date	
First Named Inventor	Chen et al
Group Art Unit	
Examiner Name	
Attorney Docket Number	100202586-5

## OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, meeting, etc.), date, page(s), volume/issue number(s), publisher, city and/or country where published.	Page
BUT		N. EHRFELD et al., Fabrication of Microstructures Using the LIGA Process, Proceedings IEEE Micro Robots and Teleoperators Workshop Nov 1997 (reprinted in "Micromechanics and MEMS -	
		O. SOLGAARD et al., Deformable Grating Optical Modulator, Optics Letters, Vol. 17, No. 9, May 1, 1992, pp. 688-690	
		D. B. SENE et al., Development and characterization of micromechanical gratings for optical modulation, Proc. IEEE MEMS-96 June-96 pp. 222-227	
		D. M. BURNS et al., Micro-electro-mechanical variable blaze gratings, Proc. IEEE MEMS-97 Workshop, Nagoya Japan, Jan. 24, 1997 pp. 55-60	
		R. K. WALI et al., Development of micromechanical deformable mirrors for phase modulation of light, Optical Engineering, Vol. 36 No. 2 Feb 1997 pp. 542-548	
		M. L. SCOTT et al., Gray Scale Deformable Grating Spatial Light Modulator for High Speed Optical Processing, Smart Structures and Materials 1997, Smart Electronics and MEMS	
		D. M. BURNS et al., Optical beam steering using surface micromachined gratings and optical phased arrays, Optical Branching Systems: Design and Applications SPIE Vol. 3131 July	
		D. ARMITAGE, Diffractive Projection Displays, Projection Displays II, SPIE Vol. 3013, May 1, 1997, pp. 112-125	
		D. M. BLOOM, The Grating Light Valve: revolutionizing display technology, Projection Displays II, SPIE Vol. 3013, May 1, 1997 pp. 165-171	
		M-H KIANG et al., Surface-micromachined Diffraction Gratings for Scanning Spectroscopic Applications, TRANSDUCERS '97, 9th Int. Conf. on Sensors and Actuators, IEEE and Transducers Research Foundation, 16-19 June 1997, Chicago, IL., June 16-19 1997.	
BUT		R. ALLAN, Reflective Color Flat-Panel Display Developed From A Deformable MEMS Optical Modulator, Electronic Design, June 23, 1997	

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		Examiner Name	
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BUT		D. M. BURNS et al., Development of microelectromechanical variable blaze gratings, Sensors and Actuators A:Physical, Vol. 64 No. 1 1998 pp. 7-15	
BUT		D. T. AMM et al., Optical Performance of the Grating Light Valve Technology, SPIE Conference on Projection Displays V, SPIE Vol. 1634 Jan. 1999 pp. 71-78	
BAT		D. C. MCCARTHY, Photonic Switches: Fast, but Functional?, Photonics Spectra, March 1, 2001, pp. 140-150	
BUT		ANON, All the Good Bits: Displaying and Printing Digital Pictures, <a href="http://www.kodakkorea.co.kr/US/en/corp/researchDevelopment/technologyFeatures/gems.shtml">http://www.kodakkorea.co.kr/US/en/corp/researchDevelopment/technologyFeatures/gems.shtml</a> , Feb. 2002	

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